ABSTRACT OF THE DISCLOSURE

A holographic optical element is provided for measuring the dimension and position of an object with aid of a deflected laser beam generated by a monochromatic and coherent laser light source that sweeps across an angular range to produce a fan-shaped reference wave front. The element includes at least two interference patterns. Each interference pattern is created through simultaneous exposure of the element to the fan-shaped reference wave front generated by the monochromatic and coherent laser light source and a parallel partial wave front generated by the same monochromatic and coherent laser light source and hitting the element at a different angle than the reference wave front. The number of parallel partial wave fronts used for the exposure of the element corresponds to the number of interference patterns, and if the parallel partial wave fronts are virtually extended through the holographic optical element, they intersect behind the element in a center of a measuring field.

DC2DOCS1\502682v2